

Southern Region – Regional Isaac Cline Award

Category: Hydrometeorology

Nominating Office: WFO Corpus Christi

Nominees: Gregory E. Wilk, Michael E. Buchanan, Jason T. Runyen

Citation: Buchanan, Runyen and Wilk are recognized for their outstanding hydrometeorological decision support, innovative development efforts and new dissemination techniques to improve forecasts, products and services during a devastating record drought across Texas.



Above: A South Texas farmer surveys the damage caused by drought

Nomination: Record-low rainfall, courtesy of La Nina, resulted in the worst drought in over 50 years across Texas. At the heart of the drought is South Texas, where extreme to exceptional drought, the worst possible levels on the USDA’s Drought Monitor, have plagued most of the region. Texas Agriculture Commissioner Todd Staples recently spoke of the drought, “Summed up in one word: Devastating”.

The drought has produced agriculture and livestock losses of over \$4 billion, with nearly 80 Texas counties in a state of emergency. The drought has also drastically reduced waters levels at reservoirs and stream flows on river, forcing water restrictions and serving a blow to tourism involving boating, swimming and fishing.

Periods of critical fire weather patterns during the drought had produced devastating wildfires across the state, with nearly 247 thousand acres burned alone in South Texas during the drought period. Unfortunately, nearly 320 structures were destroyed by wildfires in South Texas during the drought period, but thousands more were threatened yet saved, in part from reliable forecasts, and partnerships formed by Mike Buchanan, Jason Runyen and Greg Wilk.



Above: Large fires the Texas Forest Service responded to in South Texas through the drought period.

Greg Wilk, Jason Runyen, and Mike Buchanan answered the call for decision support services needed by a wide partner base affected by the multibillion dollar drought and wildfire disasters.

The trio worked cohesively in order to provide the best possible service to hydro and drought partners. This was accomplished in a number of ways, such as the creation of a drought webpage, numerous write-ups in the South Texas Weather Journal (STWJ) quarterly newsletter and a Hydrology Workshop in Victoria, TX. With historic drought conditions affecting the Hydrologic Service Area (HSA), the trio of Buchanan, Wilk, and Runyen found it imperative to provide the most up to date local drought impacts to our customers and partners. They updated the local drought statement every other week and more frequently if drastic changes occurred. The drought webpage was created and designed to update each time a new drought statement was issued. The webpage also included the current Drought Monitor and Drought Outlook products, as well as numerous helpful links. The team designed the webpage as a “one-stop shop” for everything drought related.

Above: WFO Corpus Christi’s “one-stop shop” drought page

With the understanding of the historic proportions of this drought, the trio found it very important to reach as many users as possible. Besides the continually updating webpage the team created and implemented, the team also included an article about the drought in each edition of the STWJ quarterly newsletter. As far reaching as the Internet is, the team still realized the importance of interacting and fostering relationships with our customers and partners in person. This was one of the reasons trio decided to host a Hydrology Workshop in Victoria, Texas. This workshop coincided with the 10 year anniversary of the record breaking Guadalupe River Flood, which had major impacts on the city of Victoria. City officials, media and public were all invited to attend the workshop, which included participants not just from WFO Corpus Christi, but also surrounding offices, as well as the West Gulf River Forecast Center. Several drought talks were conducted at area agricultural centers and attended by farmers, ranchers, and agriculture agencies. The talks were very successful and had high attendance, with team members explaining just how bad the drought was going to get and what the impacts would be.



Above: WFO Corpus Christi team discusses the drought forecast at an agriculture workshop in Robstown

The trio of Wilk, Buchanan and Runyen anticipated the fire weather challenges to come with higher than normal fuel loads across South Texas. The Fire Weather Program Leader led an outreach campaign well before the drought with ominous La Nina conditions looming to alert federal and state land management agencies, as well as private land owners, of the wildfire threat to come with La Nina, which included talks, prescribed burn lectureships, annual fire weather partner meetings, and a South Texas Fire Weather information brochure.

The wildfires occurred during a long extensive period. During this time frame WFO Corpus Christi excelled in alerting fire weather partners and emergency managers of upcoming critical fire weather days. WFO Corpus Christi forecasters had an average warning lead time of 15 hours for Red Flag Events during this record drought period which is well above the national goal. At the same time forecasters

have produced a POD of nearly 1.0 for red flag events and exceptionally low false alarm rates for Red Flag Warnings of 0.12.

Even more impressive, the team have also added value to fire weather forecasts over the years, by consistently recognizing the biases of Model Output Statistics (MOS) in South Texas, which produce too high of Rh values and too low of winds behind Pacific cold fronts. These are the fronts that typically produce Red Flag Days in South Texas. In fact, the recognition of these biases has resulted in several Red Flag days being correctly forecasted when they were not forecasted by MOS guidance.

In addition to excellent Red Flag Verification Statistics and stellar daily fire weather forecasts during this active period of fires across South Texas, the trio also began providing weekly fire weather threat outlooks by email during the Spring and late Fall fire seasons to fire weather partners and emergency managers. These graphical email briefings have served to further heighten awareness of elevated and critical fire danger threats, and have been used as preplanning for resources and staffing by partners. The trio also utilized daily multi-media weather briefings (MWB). The MWB offers a combined visual/auditory platform for supporting the planning activities of emergency response partners and other key customers, as well as the general public, by conveying expected timing, location, reasoning and impacts associated with the current drought and critical fire weather conditions, as well as the climatic and hydrologic outlooks. The MWB explains, in broad and primarily non-technical terms, what weather features are expected to affect the region, as well as what specific weather hazards may result from these features (flooding, tornadoes, excessive heat, severe thunderstorms, tropical weather, fog, rip currents, etc.) The purpose of the MWB is to serve as a decision assistance tool that can be used by emergency managers, first responders and other key decision makers. Area weather summaries, forecasts, and weather preparedness and safety information are included in these briefings. This multimedia briefing is available on the Internet daily, and is updated as the weather scenario evolves in order to adequately address the risks posed to citizenry of South Texas.



Left: [Multimedia briefing icon posted on the WFO Corpus Christi webpage for partners to gain insight on the immediate weather threats to South Texas for the next seven days.](#)

Below: Graphiccast sent to fire weather partners and posted on WFO Corpus Christi's website, highlighting poor smoke dispersion occurring from a wildfire.



Below: Weekly Fire Weather Outlook sent via email to South Texas Fire Weather Partners

Good morning Fire Weather Partners and EMS,

...Critical Fire Weather Conditions Today (Red Flag Warning in Effect)...

...Elevated Conditions Monday, Wednesday and Thursday...

Another dry, Pacific cold front is still on track to move through South Texas this morning with very low relative humidity values behind it. North winds will become gusty around 35 mph this afternoon through this evening. RH values dip to 10-15% across much of the area. These will result in critical fire weather conditions and a dangerous wildfire potential.

Fire weather conditions will remain elevated on Monday due to the very low RH values still anticipated, and gusty north winds still possible across the Coastal Bend. On Wednesday RH values still remain low, however winds will be light and variable in the morning with high pressure on top of South Texas, and become southeast in the afternoon as the high moves away.

Wednesday, southeast winds increase and become breezy to windy across the Coastal Bend ahead of the next low pressure system. Increasing moisture will lead to higher RH values, but still elevated fire weather conditions. Thursday, a dryline moves through much of the area and stalls near the Coast, with RH values west of I-37 dropping below 20% and south winds shifting northwest. This will result in elevated fire weather conditions into Thursday as well.

South Texas Fire Weather Outlook (April 5-11)

Today	Mon (4/6)	Tue (4/7)	Wed (4/8)	Thu (4/9)	Fri (4/10)	Sat (4/11)
Elevated	Elevated		Elevated	Elevated		
RH 10-20% N Gusts 35 mph	RH 10-15% N Gusts 35 mph	RH 10-25% Lgt Breezy 15-20-15	RH 25-45% SE Gusts 30 mph Gust	RH 30-20% Inland SW NW 20-15 mph	RH 20-30%	RH 40-15%

Stay Tuned,
Jason Ruffen
Fire Weather Program Leader
NWS Corpus Christi, TX

During a series of extremely critical fire weather days through the drought period, the team was praised by emergency managers for the excellent lead time and communication of the severity of the red flag conditions approaching. In particular, one day during the drought, 50 mph winds and single digit Rh values contributed to several wildfires across South Texas, one of which destroyed 33 homes in the town of Lagarto. Hundreds of other homes were saved that day and week across South Texas due to repositioning of state and federal resources across South Texas, which was a direct result of the WFO Corpus Christi forecasts. Email briefings on the severity of fire weather conditions approaching South Texas began by the trio to fire weather partners and emergency managers over 72 hours in advance of this critical fire weather day, with a Fire Weather Watch being posted by forecasters 54 hours ahead of the onset of red flag conditions. In addition, the use of Graphicasts aided in showing partners and the public the fire weather threat approaching.



Above: Burn scar after a devastating wildfire through the community of Lagarto during the drought period.

The Fire and Drought team also produced a series of Special Weather Statements and special video web briefings highlighting the danger of fireworks over the New Years and Fourth of July holidays during the exceptional period of drought and fire danger.

Through feedback from partner meetings, NWS Corpus Christi also implemented a new design of its Fire Weather webpage, which featured easier access to fire weather forecasts and fuel and fire danger information. NWS Corpus Christi also issued Fire Weather Point Matrices twice a day which has proved useful by the Texas Forest Service and local fire departments for daily planning of staffing.

**National Weather Service Forecast Office
Corpus Christi, TX**

Home Page | 2009 Issues | Organization | Search

Local weather: 7:45 AM 10:00 AM

Planning Forecast | Spot Forecast | Current Weather

Fuels & Fire Danger | Texas AOP | Fire Weather Links

Click for a Point Forecast Matrix (PFM)
Click for a RAWFS Point Forecast (PFWF)
Click elsewhere for a Fire Wx Post (FWP)

Fire Weather Planning Forecast by Office

Corpus Christi | Brownsville | Austin/San Antonio | Houston

Fuels & Fire Danger

10-Hour Fuel Moisture	100-Hour Fuel Moisture	1000-Hour Fuel Moisture
Current Fire Danger	Forecast Fire Danger	Haines Index
Energy Release Component	Keetch-Byram Drought Index	Palmer Drought Severity Index

Texas Annual Operating Plan

Texas Annual Operating Plan

Fire Weather Links

- NWS Corpus Christi Fire Weather Guide
- NWS National Fire Weather Page
- Southern Area Coordination Center (SACC)
- SACC Morning Report
- National Interagency Coordination Center (NICC)
- National Interagency Fire Center (NIFC)
- National Incident Management Situation Report
- National Predictive Services Program
- USFS Wildland Fire Assessment System
- Texas Interagency Coordination Center (TIICC)
- Fire Wx Forecasts from the Storm Prediction Center
- U.S. Drought Monitor
- U.S Drought Outlook
- Climate Prediction Center

Above: Redesigned Fire Weather Webpage

The team has also utilized GoToMeeting briefings for fire weather outlooks during the Spring and late Fall fire seasons. Several articles were also written by the trio for multiple editions of the South Texas Weather Journal, highlighting fire impacts across South Texas and fire weather conditions to come.

South Texas Weather Journal
Spring 2009 Edition | Corpus Christi, Texas | Weather Forecast Office

Drought Conditions Worsen Over South Texas
Victoria Area and Northwestern Coastal Bend Area in Exceptional Drought Status

A LOOK AHEAD
Dry Conditions to Continue Through the Spring

2009 Fire Season Remains Active

U.S. Seasonal Drought Outlook

South Texas Drought

Victoria Area and Northwestern Coastal Bend Area in Exceptional Drought Status

2009 Fire Season Remains Active

U.S. Drought Monitor

Big Number of Red Flag Days in South Texas

Above: STWJ Discussing Worsening Drought and Fire Season

Finally, in an effort to constantly look for ways to improve and fine-tune services, the team had participated in various after-action review meetings with partners as well as hosted several Fire Weather Partner Meetings. One such example was a collaboration project with the Texas Forest Service and surrounding WFOs to implement a more representative Red Flag Criteria across South and Deep South Texas.



Above: Fire Weather Program Leader Jason Runyen speaks to South Texas Fire Weather Partners about lessons learned from the previous fire season and the busy outlook for the fire season expected during the drought.

The historic Texas Drought and Fire Season had produced a crippling effect on the Texas and United States economies, as well as the lives of countless Texans. Texans and Americans can take pride in the fact that exceptional service provided by the NWS Corpus Christi Weather Forecast Office team has helped to predict high impact weather events and prepare a wide array of partners and agencies they count on during such drought and fire disasters. The trio of Mike Buchanan, Jason Runyen and Greg Wilk were very much catalysts and linchpin in those services and are most deserving of this 2010 Isaac M. Cline Award in the category of Hydrometeorology.